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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,703	12/20/2004	Helmut Bonnemann	100716-59 (KGB)	5370
27384 7590 08/31/2007 NORRIS, MCLAUGHLIN & MARCUS, PA 875 THIRD AVENUE 18TH FLOOR NEW YORK, NY 10022			EXAMINER YANG, JIE	
			ART UNIT 1742	PAPER NUMBER
			MAIL DATE 08/31/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/518,703

Applicant(s)

BONNEMANN ET AL.

Examiner

Jie Yang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/20/2004; 04/11/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Acknowledge of the receipt of "applicant argument/remarks" filed on 12/20/2004.

Claims 3-5, 9-11, and 14-18 have been amended from original claims, and claims 1-18 are pending in application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 recites the limitation "... the mean particle size..." in claim 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 5-7, 9 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shouheng Sun et al (NPL: Science, Vol.287, P1989, 2000, thereafter 'S287) in view of Bonnemann et al (US 5,308,377, thereafter '377).

'S287 teaches method of synthesis of monodisperse iron-platinum (FePt) nanoparticles by reduction of platinum acetylacetonate and decomposition of iron pentacarbonyl in the presence of oleic acid and oleyl amine stabilizers (Abstract of 'S287). FePt is a magnetic material, and iron pentacarbonyl is a kind of low-valency compounds of the metal of the magnetic material. But 'S287 does not explicitly states: "...in the presence of an organometallic compound of a metal of group 13". '377 teaches a process for the preparation of finely divided microcrystalline-to-amorphous metal and/or alloy powders or highly dispersed colloids by the reduction of metal salts with alkali metal or alkaline earth metal hydroxides that are kept in solution in organic solvents by means of specific complex-forming agents (Col.1, Line 9-15). '377 teaches: using metal salts and preferably the elements of the Groups IVA, IB, IIB, VB, VIB, VIIB and VIIIB of the Periodic Table (Col.2, line 6-36). Compared with instant invention, '377 uses similar organometal agent with similar metal salts for producing metals or metal alloys in powder or colloidal particles (Col.1, Line 51-57). Therefore, it would have been obvious to one of ordinary

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skill in the art to choose organometallic compound of a metal of group 13 to recover the metal or alloy powder in the pure state with particular advantage by way of a simple filtration from the clear organic solution (col.2, line 37 to col.3, line 11) as demonstrated in '377 in the process of 'S287.

Regard to claim 2, 'S287 teaches the FePt particle size is tunable from 3-10 nanometer diameter with a standard deviation of less than 5% (Abstract of 'S287), which are within the claimed ranges.

Regard to claim 5-7 'S287 further teaches the process including of decomposition of iron pentacabonyl in the presence of oleic acid and oleyl amine stabilizers (Abstract of 'S287). Iron pentacabonyl is a kind of low-valency compounds of the metal of the magnetic material.

Regard to claim 9, 'S287 teaches thermal decomposition process to synthesis of iron-platinum nanoparticles (Page 1991, Reference and notes 21 of 'S287).

Regard to claims 12 and 13, 'S287 teaches using TEM to determine FePt magnetic particle size (Fig.1 of 'S287).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over 'S287 in '377 as applied in claims 1-2, 5-7, 9 and 12-13 and further in view of the admitted prior art (Specification, page 2, Line 5-13).

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Regard to claim 10, which dependent on claim 1, 'S287 and '377 teach the limitation of claim 1, and 'S287 teaches thermal decomposition process to synthesis of iron-platinum nanoparticles as discussed in the rejection for claim 9, but 'S287 does not explicitly states: "the decomposition being effected by photolysis or sonochemically". However "photolysis or sonochemically" would be obvious alternation to "thermal" method for decomposition (Refer to applicant accepted prior art [K. S. Suslick, T. Hyeon, M. Fang, A. A. Cichowlas in: W. Moser (Ed.), Advanced Catalysts and Nanostructured Materials, Chapter 8, page 197, Academic Press, 1996; V. Bastovoi, A. Reks, L. Suloeva, A. Sukhotsky, A. Nethe, H.-D. Stahlmann, N. Buske and P. Killat, Conference Material: 8th ICMF Timisoara (1998)] and also refer to MPEP 2144.06). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute photolysis or sonochemically decomposition for thermal decomposition, as disclosed by 'S287, because photolysis or sonochemically and thermal would be functional equivalents in decomposition process, as evidenced by applicant accepted prior art, and success could be expected. See MPEP 2144.06. Claim 10 is rendered obvious by above references.

Claims 3-4, 8, 11, and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over 'S287 in view of '377 as applied on claims 1-2, 5-7, 9-10 and 12-13 and further in view of Bonnemann et al (US 6,531,304, thereafter '304).

Regard to claim 3, 'S287 does not explicitly states: "the mean particle size being established by the nature and concentration of the organometallic compound used". '304 teaches: "a process for modifying the dispersing properties of organometallic-prestabilized or organometallic-pretreated nanometal colloids..." (Abstract of '304). '304 teaches different organometallic compound (organoaluminum— AlMe_3 , AlEt_3 , $\text{AlO}_{\text{ct}3}$; NaAlEt_4 and MgEt_2 ...) were used in examples 1-14 and different particle size had been obtained (Table 1 of '304); Compared with instant invention, '304 uses similar organometal agent with similar metal salts for producing metals or metal alloys in nanometer size scale (examples 1-14 of '304). Therefore, '304 teaches how to choose different organometallic compounds to get desired size nanometal particles with modifying dispersing properties (Abstract of '304) as demonstrated in '304 in the process of 'S287.

Regard to claims 4 and 8, 'S287 does not explicitly states the organometallic compound used being an organoaluminum compounds, such as aluminumtrialkyl or an alkylaluminium hydride. '304 teaches these limitations as discussed above.

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Regard to claims 11 and 14, 'S287 teaches heat treatment of FePt nano particles under different temperature (450~600°C). But 'S287 does not explicitly states: "aftertreatment with air". '304 teaches: Fe colloids can be after treatment with oxygen to form modified protective shells (Col.4, Line 12-15). "Aftertreatment with air" can be a obvious substitute for "aftertreatment with oxygen". Because oxygen and air are functionally equivalent oxidizing atmosphere, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute air by oxygen and success could be expected. See MPEP 2144.06.

Regard to claim 15-18, they are directed to intended use of the magnet particles, therefore they are not given patentable weight. See MPEP 2111.02 II. '304 teaches related applications (Col.3, Line 64 to Col.4, Line 22).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

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